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come derived from the company's land, passenger dues, etc.

"In this estimate," continues M. Amédée Mar-teau, "not having full statistics, we have taken no account of the present and future trade of the Atlantic ports of South America and the Antilles, with all parts of the Pacific, which cannot be reckoned at less than half a million tons. Neither have we attempted to estimate the increase of European and North American tonnage which must result from the impetus given to the trade with the Pacific and Oceania, and which probably would not amount to less than an additional one or two million tons."

The aggregate tonnage, therefore, that will annually pass through the canal must be reckoned at about eleven or twelve million tons. The cost of the canal is estimated at about £50,000,000, and the interest due annually to share and bond-holders amounts to £3,000,000.

FERDINAND DE LESSEPS.

A PLEA FOR THE SENSE OF SMELL.

THE division of the five senses into higher and lower has carried with it both a moral and an aesthetic implication. While it is granted as a general proposition that sight and hearing have been the aesthetic educators of our race, yet at various times have attempts been made to rescue one or other of the remaining senses from the aesthetic degradation to which they were consigned. The aesthetic value of the tactile-mater group of sensations is deduced from the educability of the blind as regards artistic conceptions. That taste and smell play a real and worthy rôle in aesthetic life is the claim of every epicure. The very word which we use to denote artistic appreciation, 'taste,' owes its origin to this class of sensations. A recent writer¹ in this field urges the claim that the sense of taste has no right to the aesthetic position it occupies, and that it has usurped the place that of right belongs to smell. The question discussed is that of the 'gastronomic value of odors.' The point of view can be most briefly described as epicurean. The thesis is, that the pleasures of the table usually assigned as 'matters of taste' are really 'matters of smell.'

Taste and smell have all along acted in such close association, — have, so to speak, gone to the same school, learned the same lessons, enjoyed the same pleasures, and suffered the same pains, — that they have almost come to be regarded as one sense: only by special artificial means do we fully realize their dual nature. That a blindfolded person, clasping his nose tightly, will not be able

to distinguish between beef, mutton, veal, or pork will be similarly confused by bits of chicken, turkey, and duck, etc., is a familiar experience. Apart from the different kinds of feeling which these food-stuffs produce in the mouth, they are distinguished by smell alone. Hence, to get the real pleasure of eating, one must smell the food. True, society discourages this proceeding if done in the ordinary way: but, says Mr. Fincks, there is a second way of smelling not usually recognized except unconsciously by gastronomists; viz., by exhaling through the nose. In ordinary expiration the air does not touch the olfactory region of the nostril; but by a special effort the air laden with all the perfumes that make up the epicure's paradise can be turned into that direction. On this depends the art of eating. There are great individual differences in the power of accomplishing this result, and perhaps color-blindness has its analogy in smell. On the other hand, gastronomic practice for smell is as essential as artistic training for color. In both cases the teaching is largely unconscious, and instinct points out the best method of enjoying food. The mistake is, that we call every mouth-sensation a taste, and do not analyze it physiologically.

Taste is a very meagre sense: at best we distinguish six kinds, — alkaline, metallic, bitter, sour, sweet, and saline. The first two have no gastronomic value; salt is at best 'that which spoils the soup if it isn't put in,' and is not relished for its own sake; while a taste for bitter is a morbid craving for contrast, at which the unsophisticated tongue of children would revolt. Even sour and sweet must be allied with fragrance, to yield much pleasure. What we call sour is usually a combination of tastes, smells, and touches. We distinguish one sour from another by the accompanying odor. Sweetness is the 'only original and genuine' pleasure of the overrated sense of taste. Yet even here the pleasure would be small if smell did not aid. "Were taste alone to be considered, confectioners might as well close their shops, and leave the sale of sugar to grocers." No one cares much for plain sugar: even children soon learn to prefer candy; i.e., flavored sugar.

"A few gifted mortals, known as epicures, have had an instinctive knowledge of the importance of odors, and the same is true of a few original and immortal cooks." The two main obstacles to the recognition of the gastronomic reform embodied in the principle that the object of cookery is to develop the "countless delicious perfumes latent in the raw material of food, or to add others when the food is deficient in natural flavor," are the "amazing gastronomic indifference

¹ Henry T. Fincks, *Contemporary review*, November.

of mankind" and the "notion that there is something unrefined in the undisguised enjoyment of a meal." The cure for the first is a right education; the second is a relic of asceticism shown at its worst in the superstition that it is exquisitely refined and feminine for a girl to have no appetite. Epicures are healthy because they 'live on the quintessence of food' by constantly breathing through the nose. The epicure's habit of retaining this pleasure as long as possible leads to slow eating and complete mastication. Odors stimulate the flow of saliva and the other alimentary juices, and thus a gastronomist will never be a dyspeptic. Epicureanism is not gluttony: it is the ability to get pleasure out of commonplace foods. He may prefer "canvas-back duck to roast goose," but "he alone knows what an oriental rose-garden of magic perfumes may be found in the simplest crust of whole-meal or graham bread and butter."

In this strain Mr. Fincks develops the science of eating and of cooking, and applies its principles to several important classes of food-stuffs. He even proposes a new industry; namely, of so feeding poultry and other animals as to produce a special brand of meat with original *nuances* of flavor. And finally he promises us that the recognition of the royal position of smell in the gastronomic hierarchy would bring about an increase of twenty per cent or more in the average health and happiness of the community.

The notorious Jaeger holds that the soul is a smell: we have now been given reasons for believing that smell is at the least the breath of life.

J. J.

A RECENT CONTRIBUTION TO THE DISCUSSION OF HYPNOTISM.

THE French psychologists seem to be making their own the study of whole groups of mental phenomena. Of late years, almost all the valuable contributions to the subject of hypnotism, and all phenomena, have come from them. In fact, they have discovered so many new and striking facts, that almost all the old generalizations have been overthrown, and the multiplicity of facts has hardly as yet been digested into any new theory. One of the most interesting of recent discussions is that of Burgson in the November number of the *Revue philosophique*. It is valuable not only for the new light thrown upon some of the most mysterious phenomena of hypnotism, but for the suggestions which it offers to a study of the whole complex field of 'thought-transferrence.'

From time to time there have been reports of hypnotic persons who could see through opaque

objects, tell what was going on at a distance, etc. The case of some boys who could tell the title of the chapter at the head of a page, or the number of the page, when a book was opened but was held with its cover towards them, was reported to Burgson. Upon trying it, he found that one of the boys told correctly at least every other time what was required. Some experimenters would have stopped short with this, and would have heralded abroad a remarkable case of telepathic action. But Burgson continued experimenting. He noticed three things. When the hypnotized subject was asked how he knew, for example, the figures of a page, he replied that he saw them; and when he was asked to touch the back of the book, instead of touching the cover, he put his hand under and touched the open page. Another fact was, that, when the boy did not guess right the first time, he would often correct it, if the book were moved a few inches nearer or farther from the eye of the operator. The third thing was, that the figures were often read reversed, as 213 for 312. This suggested to the operator that the patient seemed to be reading as if in a mirror, and he began to wonder if it were possible that the latter read the figures or word as reflected in the cornea of himself, the operator. Simple experiments revealed, that, if the operator's eyes were closed as soon as the figure had been seen, the patient was rarely successful; that the attitude which gave the best chance for the formation of a distinct image was that in which the guess was most uniformly successful; and that the correctness of the guess decreased as the light was changed so as to obscure the reflection. The image in the cornea could not be, however, more than .1 mm. in size. In spite of the well-attested hyperaesthesia of organs in hypnotic subjects, there might be some doubt of an ability to see any thing so small. Experiments were then tried with a view to deciding this point. The most satisfactory consisted in giving the subject a prepared section of an orchid the cells of whose tissue were only .06 mm. in diameter, and telling him to draw the same. With microscopic fineness of vision this was done.

It only remained to see if the hypnotic patient's power of forming conclusions from very subtle and ordinarily imperceptible signs was confined to cornea-reading. It was easily proved that it was not. The operator hypnotized the subject sitting before him, and then made the latter believe that he was one with the operator, so that whatever affected him would also affect the subject. Then a third person, standing behind the operator, pricked some part of the latter, generally a part of his hand held behind his back. The